Allergy Abstracts

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Asthma and Hay Fever

Mental Changes Occurring in Chronically Anoxemic Patients During Oxygen Therapy. Comroe, J. H., Jr., Bahnson, E. R., and Coates, E. O., Jr.: J. A. M. A. **143**: 1044, 1950.

The administration of high concentrations of oxygen to chronic anoxemic patients may result in reactions ranging from somnolence to coma and death. In a series of 66 patients suffering from such anoxemic-producing diseases as emphysema, bronchial asthma, and chronic congestive heart failure, there was 1 death and 8 instances of mental changes following the administration of high concentrations of oxygen. It was administered through a mouthpiece supplied by a demand regulator while the patients were at rest. The fatal reaction occurred in a 60-year-old man suffering from chronic congestive heart failure with emphysema. In each of the 8 cases in which drowsiness, stupor, and coma occurred, the patients had emphysema alone, or associated with congestive heart failure or with bronchial pneumonia. There was no definite clinical or laboratory basis for predicting an unfavorable response to oxygen therapy. However, none of the patients developed somnolence unless (1) the initial arterial pCo2 (carbon dioxide concentration expressed in terms of pressure) was 50 mm. of mercury or more, (2) the arterial oxygen saturation was below 90 per cent, and (3) oxygen therapy relieved the anoxemia. The reaction, therefore, appeared to be limited to patients with pulmonary insufficiency for both oxygen and carbon dioxide. There was no definite level of arterial oxygen saturation or carbon dioxide concentration (expressed in terms of pressure) at which reaction occurred. The cause of the mental changes observed during oxygen therapy is uncertain, but it may be due to one or a combination of the following: (1) carbon dioxide narcosis, (2) cerebral vasospasm, (3) reflex depression of the cerebral cortex by high oxygen tension, (4) increased cerebrospinal fluid pressure, and (5) direct depression of the cerebral cortex by high oxygen tension. It is suggested that low oxygen concentrations should be used in the treatment of the chronic anoxemic patient with careful repeated examinations for at least the first 3 hours of the therapy.

F.

Acute Parietal Endocarditis in a Case of Status Asthmaticus: A Possible Early Stage of Loeffler's Endocarditis Parietalis Fibroplastica With Eosinophilia. Lennox, B.: J. Path. & Bact. **60**: 621, 1948.

A 53-year-old female who died of status asthmaticus developed a sustained blood eosinophilia during the last month of her illness. Prior to this time, her eosinophile count was not abnormal. At autopsy, most of the smaller bronchi were found to be filled with thick mucous plugs. On microscopic examination, the endocardium of the left ventricle showed extensive cellular infiltration. The author regards this case as an example of the early stage of the syndrome of parietal endocarditis with eosinophilia.

The 6 previously published cases of endocarditis parietalis fibroplastica with eosinophilia of Loeffler are summarized. The characteristic clinical features of the syndrome are congestive heart failure and eosinophilia. The post-mortem findings consist of massive endocardial fibrosis and extensive mural thrombosis of one or both ventricles with little or no involvement of the valves. The scar tissue and thrombus formation are believed to obstruct ventricular contraction from within and lead to heart failure.

Histologic examinations in these cases revealed old scar tissue and organizing thrombus. In 2 cases, however, signs of activity indicated by cellular infiltration in the endocardium were found.

The case presented showed a cellular infiltration of the endocardium and the author believes that mural thrombosis imposed on such an endocardial lesion and followed by organization would duplicate the end result of Loeffler's endocarditis.

The etiology of this syndrome is presumed to be allergic. All of the cases showed an eosinophilia; the author's patient had asthma; one of the reported cases had urticaria; and another had vascular lesions simulating early polyarteritis nodosa. J. SHERMAN.

An Approach to the Problem of "Epinephrine Fastness." Yonkman, F. F., Levinson, L., and Segal, M. S.: Am. J. Digest. Dis. **17**: 149, 1950.

Studies by other investigators have demonstrated the following findings in rabbits: (1) lethal doses of epinephrine administered intravenously produced death from pulmonary edema; (2) significant increments of plasma and whole blood histamine occurred after intravenous therapeutic doses of epinephrine; and (3) pulmonary edema from intravenous epinephrine could be prevented by the antihistaminics. The correlation of these three significant studies led the present authors to conclude that epinephrine fastness may be due to the release of histamine subsequent to epinephrine injections. This released histamine, which is longer acting than epinephrine, may produce bronchial constriction and a resultant poor response to further adrenalin injections, actually an epinephrine-histamine intoxication. Ten epinephrine-fast patients were treated on the basis of the theory that the antihistamines would preclude this epinephrine-histamine intoxication. Eight of the ten patients experienced significant improvement under this regime. F.

Disseminated Focal Necrosis With Eosinophilia and Arteritis in a Case of Asthma (Loeffler's Syndrome). Smith, J. F.: J. Path. & Bact. **60**: 489, 1948.

A 48-year-old woman with asthma, eosinophilia, and pulmonary lesions was observed. The disease eventually proved fatal and, at autopsy, widely disseminated lesions were found, some being of the polyarteritis nodosa type. There was, in addition, widespread eosinophilic infiltration in most organs and necrotic granulomatous areas in the lungs. The author believes that this case may be a link between the benign Loeffler's syndrome and the usually fatal polyarteritis nodosa. J. SHERMAN.

Dermatology

Urticaria and Angio-Edema in Association With Amebiasis. Cohen, S. G., and Criep, L.: Am. Practitioner **1**: 246, 1950.

Among twenty-eight veterans suffering from chronic urticaria and angioedema of undetermined etiology, nineteen were found to have amebic infestations without the classical signs and symptoms of this disease. Little or no eosinophilia was noted among this group. Treatment with carbarsone, Diodoquin and, in certain cases, with emetine resulted in all instances in the eradication of the parasite and the concomitant disappearance of the urticaria and angioedema. F.

Prophylaxis of Rhus Toxicodendron Dermatitis. Hoagland, R. J.: New England J. Med. **242**: 130, 1950.

Three groups of cadets at the United States Military Academy at West Point were employed as subjects in these studies. Group I consisted of cadets whom the writer had seen during attacks of poison ivy dermatitis in the previous summer. Twenty-one of these men received poison ivy extract inoculations in the spring and 12 men served as controls. That summer, they spent 8 weeks at a camp where poison ivy abounded. Dermatitis developed in 83.4 per cent of the control group and in 66.6 per cent of the injected group. Group II consisted of 34 cadets who stated that they had had poison ivy dermatitis and of 2 cadets who had never had dermatitis. All these men were inoculated and spent the summer at the same camp. Dermatitis developed in 50 per cent of these cadets, including the 2 who had never had it before. Group III consisted of 21 cadets who received poison ivy inoculations, but who were not in training at the above camp and were not exposed to a large amount of poison ivy. Dermatitis developed in 24 per cent of this group. It is obvious that, in properly controlling an experiment of this kind, the varying sensitivity of the patient as well as the duration and intensity of contact with the poison ivy must be taken into account. Examination of the above findings reveals a lower incidence of dermatitis among the cadets of Group II than among those of Group I. It is conceivable that this difference may be due to the fact that, in the second group, the diagnosis of poison ivy dermatitis had been made on the basis of history alone and that some of these may have been insensitive to *Rhus toxicodendron.* The importance of the degree of contact with the plant is emphasized by the low incidence of dermatitis found in Group III. On the basis of these findings, it seems reasonable to conclude that the variation in the incidence of dermatitis among the inoculated and uninoculated groups is not sufficient to warrant the use of painful preventative poison ivy extract injections. B. S.

Angioneurotic Edema and Rash Due to Aureomycin. Parets, A. D.: J. A. M. A. **143**: 653, 1950.

A 35-year-old man, who previously had had urticaria, angioneurotic edema, and a serum-sickness-like reaction due to medications, was treated for bronchiectasis with 2 Gm. of aureomycin daily. On the seventh day of therapy, a severe reaction occurred. This consisted of angioneurotic edema of the face and a nonpruritic erythematomacular rash which covered most of the body. These symptoms lasted for 1 week and were not relieved by antihistaminic drugs. During the following ragweed season, the patient developed typical pollinosis for the first time. F.

Dermatographic Prurigo. A Syndrome of Constitutional, Psychic, and Mechanical Aetiology. Marcussen, P. V.: Acta dermat.-venereol. **30**: 95, 1950.

In 1 per cent of all patients with prurigo (45 cases of 11,000 patients with dermatologic complaints), the author encountered a syndrome, which he named

dermatographic prurigo. The clinical picture consists of a slight generalized pruritus associated with pronounced pruriginous changes at multiple friction sites under tight clothing and at prominent bony areas. Patch tests ruled out the possibility of a contact dermatitis. Allergic investigations were completely negative. All patients in this group exhibited dermographism; 25 per cent of the group had had similar lesions previously; 15 per cent had had some form of psychiatric treatment; and 71 per cent had "mental disorders." Most of the patients were females in the second to fourth decades of life. Improvement often occurred spontaneously, or was effected by antihistamines and psychotherapy. The author believes the syndrome occurs in patients with a constitutional dermographism who, as a result of a neurosis, develop a mild itch which is further aggravated by friction. H.

Exfoliative Dermatitis and Hepatitis Due to Phenobarbital. Welton, D. G.: J. A. M. A. **143**: 232, 1950.

A 25-year-old pregnant woman who was taking 1.5 grains of phenobarbital daily developed an erythematous rash of the face on the fortieth day of medication. The drug was continued for 6 days thereafter, in spite of the presence of a generalized involvement of the skin, swelling of the face, eyelids and arms, and beginning exfoliation. The drug was discontinued, but she then was given 6 doses of pentobarbital sodium. She became extremely ill and, at the time of hospitalization, presented deep injection of the buccal and pharyngeal mucosa, a copius purulent exudate from the conjunctiva, moist râles in both lower lung fields, pitting edema of the ankles and feet, a palpable liver and spleen, and generalized lymphadenopathy. The white count rose to 73,500 with 32 per cent eosinophiles. On the sixth hospital day, slight icterus developed and the icteric index soon rose to a peak of 90, with accompanying deep jaundice of the skin. The liver became larger and more tender, and bile was present in the urine. Serum albumin was markedly reduced. Recovery occurred under symptomatic therapy. F.

Contact Dermatitis Due to Cinnamon. Epstein, F. W.: Ohio State M. J. **46**: 659, 1950.

A severe erythemato-papular eruption on the hands of a baker was found to be due to contact with cinnamon. Patch tests with various substances with which the patient had contact were all negative except for cinnamon. Within 15 minutes following the application of cinnamon, there was definite burning and itching locally. When examined 2 days later, the patch test area was still erythematous. F.

The Action of Histamine Antagonists on the Histamine Wheal and the Eczema Test. (Patch Test). Nilzen, A.: Acta dermat.-venereol. **30**: 1, 1950.

Intracutaneous tests were performed with 0.05 c.c. of a mixture containing equal parts of a 1:10,000 solution of histamine dihydrochloride and a 2 per cent antihistamine solution. The wheals and flares were recorded at the end of 15 minutes. A mixture of histamine and saline was employed as a control. When the scratch technique was used, a 2.5 per cent of an antihistamine solution was rubbed into a scarified skin area. This was washed off 15 minutes later, and a drop of 1:1000 histamine was applied. All antihistamines tested exerted an appreciable inhibitory action on wheals formed by either the intracutaneous or the scratch technique. Benadryl, Neohetramine, and Thephorin were the weakest in inhibitory action, while Anthisin and Antergan were the most effective.

The oral administration of antihistamines for 48 hours prior to patch testing in known contact-sensitive cases had no effect on the result of the patch test. In 21 cases, the antihistamine was added to the test material prior to patch testing. An inhibition of the contact reactions produced by chromium and formalin was noted. No effect was observed in turpentine-sensitive cases. For some unexplained reason, the antihistamines enhanced the patch test reaction in nickel-sensitive cases. H.

Otorhinology and Ophthalmology

Bacteriologic and Classical Interpretation of the Flora of the Nose and Nasopharynx in Adults. Goldman, J. L.: Ann. Otol., Rhin. & Laryng. **59**: 156, 1950.

Nasal and nasopharyngeal cultures were made on 146 individuals in whom careful clinical examination failed to reveal any evidence of nasal or sinus disease. These studies were carried out during the winter and spring in such widely separated areas as New York, Florida, and Texas. The most common microorganism found in the normal nose in the entire series was a nonpathogenic staphylococcus. Diphtheroids, *Str. nonhemolyticus*, and *Str. viridans* were obtained in only a small percentage of cases. The normal nasopharynx yielded pneumococcus in 21 per cent of cases, *Str. hemolyticus* in 18 per cent, and *Str. viridans, Str. nonhemolyticus*, and staphylococcus in higher percentages. Pneumococci and hemolytic streptococci were not found in the normal nasal cavities except when they were also present in pharynx.

A special study was made of a group of 37 patients presumably suffering from vasomotor rhinitis. Diagnostic lavage and culture of the sinuses of these patients proved them to be free of infection. Pneumococci were found in the nose of only 3 patients, but they were present in the nasopharynx in 57 per cent of this group. *Str. hemolyticus* was absent from the nasal culture, yet it was isolated from the nasopharynx in 13 per cent of the patients. *Str. viridans* was obtained from the nose of 2 patients and from the nasopharynx in 18. Staphylococci obtained from the nasal cavities of these patients were usually few in number. It is interesting to note that the bacterial flora of the nose and nasopharynx of patients with vasomotor rhinitis was similar to that found in normals. C.

Role of Allergy in the Epidemiology of the Common Cold. Fox, N., and Livingston, G.: Arch. Otolaryng. **49**: 575, 1949.

Although the virus is generally accepted as the causative organism in the common cold, fatigue, exposure to cold, and debility have been incriminated as contributory factors without confirmatory laboratory data. These factors, however, are known to influence adversely the allergic state of some patients.

In a study of over 3,000 cold-susceptible subjects, 80 per cent were found to have a positive past or family history of allergy. One hundred per cent of these patients had hyperplastic disease of the upper respiratory tract which varied from mild thickening of the turbinates to the formation of large polypoid masses. It was found that individuals with hyperplastic tissues highly susceptible to colds rarely have a cold which lasts only 4 to 5 days. Almost invariably they develop a secondary infection of the sinuses which lasts from 3 to 6 weeks. The authors conclude that the respiratory tissues of certain individuals who have other allergies show a particular sensitiveness to the virus protein. As a result this antigen combines with sessile receptors in the cells releasing histamine which causes increased permeability and hence creates optimum conditions for the overgrowth of secondary invaders. C.

Perennial Nasal Allergy. Craddock, W. H.: Ann. Otol., Rhin. & Laryng. **58**: 671, 1949.

In analysis of 80 cases of allergic rhinitis, the most prevalent symptoms were nasal obstructions, sneezing, and postnasal drip. Nasal obstruction confined to one side is usually not of an allergic nature. In 38 per cent of patients, the nose appeared normal, but eosinophiles were found in the nasal secretions of 66 per cent of the 80 cases. Roentgenograms of the sinuses showed clouding in 35 per cent of the patients. Eighteen patients were found to be food sensitive and 12 were sensitive to inhalants. Humidity increased symptoms in 22 per cent, and air conditioning aggravated symptoms in 18 per cent. In 36 per cent of the patients, the symptoms were aggravated by emotional stress. In the treatment of perennial allergic rhinitis, the best results were obtained by combining surgery and allergic management. However, in those instances where structural damage had resulted from previous radical surgical procedures it was difficult to obtain a satisfactory response in spite of adequate allergic management. C.

Miscellaneous Allergies

Allergic Reactions From the Ingestion or Intravenous Injection of Cane Sugar (Sucrose). Randolph, T. G., and Rollins, J. P.: J. Lab. & Clin. Med. **36**: 242, 1950.

Allergic symptoms such as myalgia, mental confusion, depression, extreme fatigue, nervousness, tenseness, and "jitteriness" may be occasionally attributed to cane sugar sensitivity. Four cases of cane sensitivity manifesting these symptoms are reported. The removal of cane sugar from the diet of these patients produced marked improvement in their symptomatology. Experimental feeding of cane sugar reproduced the symptomatology in each patient. The intravenous administration of invert sugar in 2 patients reproduced symptomatology almost immediately. In these same 2 patients, the ingestion of dextan was accompanied by symptoms. Further study is needed to determine whether cane sensitivity is related to the presence in cane sugar of immunologically specific polysaccharides. E. W.

Immediate (So-called "Immune") Reaction to Smallpox Vaccination. Benenson, A. S.: J. A. M. A. **143**: 1238, 1950.

The immediate or so-called "immune" reaction to smallpox vaccination is a manifestation of sensitivity to virus fractions and does not necessarily indicate immunity. It can be elicited with dead virus as well as with live, potent vaccine. This was demonstrated in a series of subjects vaccinated with heated inert smallpox vaccine and with various potent vaccines. Immediate reactions occurred with both types and were of a similar morphology. The reactions ranged from a simple papule to one which was replaced by vesiculation and pustulation surrounded by a zone of erythema. Vesiculation occurred more frequently with the inactivated than with the potent vaccine. An immediate reaction, therefore, merely indicates previous contact with the virus. The immediate reaction can be regarded as indicative of an immunity sufficient to protect against exposure to virulent variola strains only when the vaccine used is known to be of high potency and when it has been properly applied. F.

Is Psoriasis a Bacterial Allergy? Baird, K. A.: Brit. J. Dermat. **62**: 129, 1950.

Having noted a coincident remission of psoriasis in patients being treated with sensitized vaccine for such conditions as sinusitis, acne, etc., the author proceeded to treat cases of psoriasis with sensitized vaccine. Twenty patients with psoriasis varying in duration from 3 weeks to 40 years were either im-

proved or cured. The possibility is that psoriasis may be due to an abnormal reaction of localized skin areas to a circulating antigen, probably some product of bacteria which are present in another part of the body. C.

Anaphylaxis

The Effect of Sodium Salicylate Upon Hypersensitivity Reactions. Smith, W., and Humphrey, J. H.: Brit. J. Exper. Path. **30**: 560, 1949.

Sodium salicylate in blood concentrations of 50 mg. per 100 ml. had no effect on the course of acute anaphylactic shock in guinea pigs. Various antihistamine drugs afforded adequate protection against anaphylactic shock. Sodium salicylate did exert a protective action against the production of passive Arthus reactions in both the guinea pig and the rabbit. Antihistamine drugs are relatively impotent in such experiments. The protective action of sodium salicylate was most evident in the prevention of the production of the Shwartzman phenomenon in rabbits. This property of sodium salicylate is not the result of an antihistaminic effect, but appears to be due to direct action on the wall of the local blood capillaries, which prevents the increased capillary permeability from occurring in the hypersensitivity reaction. H.

The Role of the Adrenal Glands in Anaphylactic Shock in the Guinea Pig. Aguirre, M., and Trigueros, E. A.: Acta allergologica **3**: 1, 1950.

The vitamin C content of the adrenal glands of guinea pigs was determined in acute, fatal anaphylaxis and in delayed anaphylactic shock. There was little difference in the adrenal vitamin C content of the shocked animals and of normal animals. Because of the absence of evidence indicating changes in the vitamin C metabolism, the authors believe that the adrenal cortex plays little or no part in the production of the anaphylactic state. H.

Blood Histamine in the Anaphylactoid Shock Produced by Antiplatelet Serum in Dogs. Moussatache, H., and Cruz, V. O.: Brit. J. Exper. Path. **30**: 506, 1949.

Classical symptoms of anaphylactic shock can be produced in guinea pigs, rabbits, rats, and dogs by the intravenous injection of antiplatelet serum. Anaphylactoid shock produced in dogs by antiplatelet serum was not accompanied by a change in the histamine concentration in the blood, in contrast to the high blood levels of histamine which occur in this animal during peptone and tryptic shock. H.

The Effect of Adrenocorticotropic Hormone on Circulating Antibody Levels. De Vries, J.: J. Immunol. **65**: 1, 1950.

Rabbits previously sensitized with crystalline egg albumin were each given 50 mg. of adrenocorticotropic hormone (ACTH) intramuscularly. All the animals developed a marked lymphocytopenia following the injection, the maximum response occurring in about 9 hours. Samples of blood taken at this time failed to show a concomitant rise in circulating antibody. Twenty-four hours after the beginning of the experiment, the lymphocyte counts had returned to normal, but the circulating antibody titers and the hematocrit values were still below those of the controls.

Since the marked diminution in the number of lymphocytes was not followed by a release of antibody into the circulation, it is suggested that either lymphocytes do not store antibody globulin or that the decrease in circulating lymphocytes does not result from their disintegration in the blood stream. The

author concludes that, despite a fall in the number of circulating lymphocytes, administration of ACTH to immunized rabbits failed to produce a rise in circulating antibody levels. R. WISEMAN.

Pharmacology, Physiology, and Pathology

The Use of Bacitracin, A New Antibiotic, in Aerosol Form. Preliminary Observations. Prigal, S. J., and Furman, M. L.: Ann. Allergy **7**: 662, 1949.

Bacitracin in doses of 12,000 to 134,000 units per day was administered as an aerosol to 100 patients. These patients were divided into 3 groups: (1) those with only chronic paranasal sinus infections; (2) those with respiratory infections which included bronchiectasis, chronic bronchitis, or infective asthma; and (3) the mixed or sinorespiratory type. Of 17 patients who were treated with bacitracin alone, about 76 per cent showed marked or moderate improvement. Among 83 patients treated with bacitracin and penicillin in combination, 85.6 per cent were markedly or moderately improved. These figures were compared with the 73 per cent improvement obtained when penicillin alone was used. Improvement was maintained for from 2 weeks to 1 year. Studies of cultures obtained from the pharynx of 38 patients indicated that penicillin and bacitracin were almost identical in their antibiotic activity. Moreover, 9 organisms which were not affected by penicillin were sensitive to bacitracin and, conversely, 10 organisms not inhibited by bacitracin were sensitive to penicillin. Unfavorable reactions to bacitracin were suspected in 2 cases. Absorption of bacitracin from the respiratory system could not be demonstrated. W.

The Effect of Splenectomy on the Formation of Circulating Antibody in the Adult Male Albino Rat. Rowley, D.: J. Immunol. **64**: 289, 1950.

When a small amount of sheep erythrocytes was administered intravenously to splenectomized rats and to a control group, a marked diminution in the hemolysin titer was noted in the splenectomized animals. The immunologic response was the same, whether sensitization was induced immediately following removal of the organ or 6 months later. Immunization induced before surgery failed to alter the response of the animals to the same specific immunization following splenectomy. When small amounts of antigen were administered intraportally or intraperitoneally, the splenectomized animals responded equally as well as control animals. The experimental findings indicate that the production of circulating antibody in the splenectomized rat is dependent upon the dosage of antigen and the route of administration. R. WISEMAN.

Effect of Anti-Rat-Liver Serum in Rats. Estes, H. R.: Arch. Path. **47**: 399, 1949.

An anti-rat-liver rabbit serum was administered intraperitoneally to 4 groups of rats every two days for 2, 4, 14, and 90 days, respectively. The animals were autopsied 48 hours after the last dose. Those that received 1 or 2 injections showed scattered small granulomatous lesions in the liver with cellular infiltration and focal necrosis. All the other animals including controls showed no lesions either in the liver or in the other organs. It is thought that the initial dose of antiserum damages the liver, but that it quickly regenerates and develops resistance to subsequent doses. J. S.

Treatment of Procaine "Hypersensitivity" With Neostigmine. Buff, I. E.: Am. Pract. **1**: 347, 1950.

In toxic or "hypersensitive" reactions to procaine, the outstanding symptom is a pronounced tachycardia which develops with alarming rapidity. It

has been shown that neostigmine methylsulfate frequently aborts attacks of supraventricular tachycardia. The author, therefore, employed this drug in the treatment of procaine reactions. It was found that a dose of 0.5 to 1.0 mg. of neostigmine methylsulfate, given subcutaneously or intravenously, almost immediately reduced the cardiac rate to within normal limits. The accompanying symptoms of tremor, irregular respiration, anxiety, and blurring of vision also rapidly improved. The mechanism of the action of neostigmine is unknown, but it may be due to vagal stimulation. The author has observed 20 cases of procaine "hypersensitivity" all of which responded dramatically to neostigmine. F.

Inhibition of Hyaluronidase in Vivo by Adrenal Cortical Activation. Shuman, C. R., and Finestone, A. J.: Proc. Soc. Exper. Biol. & Med. **73**: 248, 1950.

Twenty normal subjects were given intracutaneous injections of 0.1 c.c. of a standardized mixture of hyaluronidase and fluorescein. After 4 to 8 minutes, the dye was no longer detectable. Four hours following a subcutaneous injection of 0.3 c.c. of epinephrine (1:1000), the disappearance time of the dye in the mixture was an average of 21 minutes. A marked decrease in the total number of circulating eosinophiles was attributed to stimulation of adrenal cortical activity as a result of the adrenalin. Salicylates were also found to have an inhibiting effect on hyaluronidase. Adrenal steroid, given intra-arterially, inhibited hyaluronidase in the area supplied by the artery. In 3 patients with diminished adrenocortical function as measured by 17-ketosteroid excretions and eosinophilic response to adrenalin, no inhibition of hyaluronidase could be detected by the fluorescein technique. The possibility of utilizing the inhibition of hyaluronidase as a test for pituitary adrenal response to epinephrine is discussed. R. WISEMAN.

The Action of Sympathomimetic Amines on the Central Nervous System and the Blood Sugar. Relation of Chemical Structure to Mechanism of Action. Leimdorfer, A.: J. Pharmacol. & Exper. Therap. **98**: 62, 1950.

Epinephrine and, to a lesser extent, N-isopropyl arterenol, Butanefrine, and 1-arterenol (catechol compounds) produce analgesia and anesthesia when injected intracisternally in dogs. Accompanying these effects is a high hyperglycemia lasting longer than that following intravenous epinephrine and stimulation of the respiratory center. The blood pressure and the electrocardiogram are not affected by intracisternal epinephrine, although the other drugs do affect these responses. The analgesia-anesthesia effects could not be attributed to vasoconstriction or to hyperglycemia. The pharmacologic relation of epinephrine to morphine is discussed. The phenol compounds, Synephrine and Neosynephrine, produced short-lasting sedation and excitement, respectively. Phenyl compounds, such as ephedrine, Propadrine hydrochloride, and Benzedrine, produced excitement with hypertension and electrocardiographic changes. The 2-amino-heptanes behaved similarly. K.

The Chemical Basis for Adrenergic Blocking Activity in Compounds Related to Dibenamine. Nickerson, M., and Gump, W. S.: J. Pharmacol. & Exper. Therap. **97**: 25, 1949.

The chemical and pharmacologic properties of 113 compounds similar to the adrenergic blocking agent, dibenamine, are discussed. These agents blocked the excitatory effects of epinephrine and related amines and of the sympathetic nerve impulses. The inhibitory effects of the sympathomimetic agents remained

unaltered. The mechanism of action appeared to be the alteration of some process or substance necessary for the excitatory response of specific effector cells to sympathomimetic agents. The chemical patterns characterizing adrenergic blocking activity were specified. K.

Inotropic Action of Epinephrine, Nor-epinephrine, and N-Isopropyl-Nor-epinephrine on Heart Muscle. Garb, S.: Proc. Soc. Exper. Biol. & Med. **73**: 134, 1950.

The effects of epinephrine, d-l nor-epinephrine (Arterenol) and N-isopropyl-nor-epinephrine (Isuprel) on the contractile force of isolated papillary muscle preparations of a mammalian heart were studied. All of these sympathomimetic amines exercised an ionotropic action on the heart muscle. I. GLAZER.

Neurological Effects of Oxygen in Chronic Cor Pulmonale. Davis, C. E., and Mackinnon, J.: Lancet **257**: 883, 1949.

Two cases of chronic cor pulmonale developed neurologic manifestations following oxygen therapy. In one case, uncontrollable myoclonic movements appeared without any signs of tetany and disappeared following the withdrawal of oxygen. In the second case, coma developed following oxygen therapy and the patient died. Necropsy failed to reveal the cause of death. On the basis of these experiences, the effect of oxygen on the cerebrospinal fluid pressure was studied in 4 patients with chronic cor pulmonale. In all 4 cases, the resting cerebrospinal fluid pressure was found to be high. When pure oxygen was administered through an anesthetic apparatus at the rate of 6 liters per minute, the intrathecal pressure rose abruptly within a few minutes. Upon withdrawal of the mask, the pressure continued to rise for another minute and then fell precipitously. Five patients who did not have chronic cor pulmonale or cyanosis were studied in a similar fashion and failed to show a rise in intrathecal pressure. To exclude the possibility that the rise in pressure might have been due to the discomfort of breathing in a mask or to the accumulation of carbon dioxide within the apparatus, the same experiment was repeated with a simple anesthetic mask, which permits the oxygen to enter through a large anterior opening. Again there was an abrupt rise in intrathecal pressure. When air was substituted for oxygen, the pressure fell and remained below the resting level. However, without moving the mask, the substitution of 50 per cent oxygen again produced an abrupt rise in pressure. The rapidity of fluctuations in pressure suggests that there is some effect on the caliber of the cerebral vessels. The rise in intrathecal pressure in cor pulmonale, following the administration of oxygen, is possibly linked with changes in the metabolism of carbon dioxide. The theory that oxygen intoxication is due to the accumulation of carbon dioxide in the body because of interference with the transport of carbon dioxide by hemoglobin may also explain the above findings. B. S.

Failure of Antihistaminic Drug "Phenergan" to Protect Against Acute Pulmonary Edema. Winter, C.: Proc. Soc. Exper. Biol. & Med. **72**: 122, 1949.

Pulmonary edema was produced in rats and guinea pigs with massive doses of either epinephrine chloride, intravenously, or ammonium chloride, intraperitoneally. Within 30 to 60 minutes, the animals were injected subcutaneously or intraperitoneally with 20 to 40 mg. per kg. of Phenergan (3277 R.P.). There was no significant difference in the death rate or incidence of pulmonary edema,

as determined by measuring the lung weight, of the treated and the control animals. The authors conclude that Phenergan in doses as high as 40 mg. per kg. fails to protect either guinea pigs or rats from pulmonary edema induced by the injection of ammonium chloride or epinephrine. R. WISEMAN.

Resistance to Epinephrine Stress in the Dog. Last, J. H., Jordan, P. H., Pitesky, I., and Siegel, B. M.: Proc. Soc. Exper. Biol. & Med. **74**: 96, 1950.

Epinephrine was administered intravenously to dogs in doses of 5 or 10 μg/kg. per minute for 60 minutes. Most of the animals showed a depression in the eosinophile count in excess of 30 per cent following the initial infusion. However, after repeated daily infusions of epinephrine, about one-half of the animals failed to show the eosinopenic response. While in this epinephrine refractory state, the animals continued to demonstrate the hyperglycemic response to epinephrine. Other stresses inflicted upon the epinephrine-resistant animals, such as exposure to cold, injection of ACTH, infusion of glucose or histamine, and injection of large doses of epinephrine, all elicited eosinopenic responses. Thus, the explanation of epinephrine refractoriness is not depletion of endogenous ACTH. It is suggested that, as the animals become adapted to epinephrine as a stress, the tissue utilization of corticoids decrease. Therefore, the stimulus for ACTH production is removed and eosinopenia does not occur. The demonstration of an epinephrine-resistant state makes it difficult to accept the hypothesis that epinephrine acts as the continuous physiologic activator of the pituitary adrenal mechanism. B. S.

Antihistaminic Agents—Studies of Their Metabolism by Means of Quantitative Analytical Methods. Perlman, E.: Bull. New York Acad. Med. **26**: 565, 1950.

The addition of cyanogen bromide to antihistaminic compounds results in a new substance which exhibits an intense blue fluorescence when exposed to ultraviolet light. Fluorescence develops only with those antihistaminic substances which contain the three nitrogen atoms in the same configuration as that occurring in Pyribenzamine. Those antihistaminic substances which contain only the pyridine radical develop a color which can be intensified with coupling agents such as *p*- aminoacetophenone.

The test was applied in studying the urinary excretion of Pyribenzamine. It was found that when these urines were heated with alkali, material could be extracted with organic solvents which would develop a fluorescence with cyanogen bromide. This material appeared to be Pyribenzamine. It was found that, after a single oral dose of Pyribenzamine, about 10 per cent was excreted in 24 hours. When Pyribenzamine was administered intravenously, it was excreted at the same rate and to the same extent as the equivalent dose given orally. C.

The Failure of Antihistaminic Drugs to Influence the Local Vascular Changes in Experimental Burns. Sevitt, S.: Brit. J. Exper. Path. **30**: 540, 1949.

In burns, the edema, blistering, and peripheral extension of erythema beyond the burn site has been considered to be due to the release of large amounts of histamine which act directly on the blood vessels. Various types of burns were produced on guinea pigs pretreated with Benadryl, Neoantergan, and Antistine. The amount of antihistamine drugs administered was adequate to inhibit histamine whealing in control animals. All three drugs failed to inhibit the lesions produced by burns of different degrees. H.

The Histamine Activity of Some B-Aminoethyl Hetero-cyclic Nitrogen Compounds. Lee, H. M., and Jones, R. G.: J. Pharmacol. & Exper. Therap. **95**: 71, 1950.

Eleven of a series of 24 compounds related to histamine were tested for histamine activity as indicated by the depressor response of cats, guinea pig ileum contraction, and antagonism by an antihistaminic drug. The relationship of chemical configuration to histamine activity is discussed in detail. The size and shape of the aromatic nucleus is important as is the arrangement of the atoms within the aromatic portion of the molecule. Unlike certain other substances, bond distances and bond angles do not appear to influence the physiologic activity. E. KAILIN.

Acute Coronary Insufficiency Pattern Following Intravenous Ergotamine Studies. McNerney, J. J., and Leedham, C. L.: Am. Heart J. **39**: 629, 1950.

Gynergen was employed diagnostically in 0.5 mg. doses (1.0 ml.), intravenously, in cases of possible coronary insufficiency. Ergotamine blocks sympathetic discharges and thus permits vagal impulses to act on the coronary arteries unopposed. In over 50 patients subjected to testing with Gynergen, there were no untoward responses. In 1 patient, however, the injection caused acute substernal distress with electrocardiographic changes. It was concluded that the use of ergotamine tartrate "is contraindicated in patients who have conclusive clinical and/or electrocardiographic evidence of coronary insufficiency." E. KAILIN.

Quinidine Allergy. Siegal, S., and Horn, H.: Am Heart J. **39**: 302, 1950.

Two patients with allergic responses to quinidine were studied. One patient exhibited a severe febrile reaction and thrombocytopenic purpura. Patch, scratch, and passive transfer tests with quinidine were negative, but clinical trials indicated sensitivity. One patient was able to take quinine in doses of 0.03 and 0.12 Gm., but could not tolerate a dose of 0.6 Gm. of quinine. A second patient experienced febrile and urticarial responses to quinidine. She had had similar episodes previously following the ingestion of quinine. E. KAILIN.

Antihistamine Therapy in Experimental Shock. Ederstrom, H. E., Calman, C., and DiGangi, M. R.: Proc. Soc. Exper. Biol. & Med. **74**: 104, 1950.

Anesthetized rats were shocked by the application of rubber bands to the hind legs for 3 hours and 40 minutes. Some animals in this group were given various doses of Benadryl or Thephorin, intraperitoneally, either before or after the application of the tourniquets. There was no significant difference in the mortality rate between the treated and untreated groups. Dogs shocked by exposing their hind legs to 90° C. for 5 seconds were treated with Benadryl administered intravenously or intramuscularly. Saline was administered to a control group. The treated group did not differ significantly from the untreated controls with respect to mortality, blood pressure, hematocrit, and blood and serum specific gravity. B. S.

Effects of Pyribenzamine on the Respiration of Mouse Brain Homogenates. Hubbard, T. F., and Goldbaum, L. R.: J. Lab. & Clin. Med. **35**: 284, 1950.

In vitro studies were conducted on the brains of mice in an effort to elucidate the mechanism of the hypnotic and convulsion-producing effects of Pyribenzamine. Pyribenzamine showed selective inhibition of respiration of brain homogenates. The oxidation of glucose, pyruvate, and the anaerobic glycolysis of

glucose was inhibited, whereas the succinic oxidase or cytochrome oxidase systems were unaffected. Pyribenzamine in concentrations of 1.5 mg./ml. produced 50 per cent inhibition of glucose and pyruvate oxidation. About 4.0 mg./ml. of the drug produced 40 per cent inhibition of anaerobic glycolysis. The inhibition of glucose oxidation was overcome by the addition of 6×10^{-4} M methylene blue. The ability of methylene blue to by-pass the block interposed by Pyribenzamine suggests that the block probably occurs between the pyridine neucleotides and the cytochrome system. This inhibition is similar to that observed with the barbiturates. The amount of Pyribenzamine necessary to produce these effects was ten times the intraperitoneal LD_{50} of the drug. E. W.

The Effect of Aminophylline on the Prothrombin Time of Normal Human Plasma. Overman, R. S., and Wright, I. S.: Am. Heart J. **39**: 65, 1950.

Fifteen normal adults took 200 mg. of aminophylline 3 times daily for 14 days and then the total daily dose was increased to 1.0 Gm. a day for 4 weeks. Prothrombin determinations were carried out by 3 methods before and during the administration of the drug. It was found that aminophylline administered orally in ordinary dosage does not affect the prothrombin times of normal adults. E. KAILIN.

The Effect of Treatment With an Antihistaminic Drug on Blood Pressure and Urine in Pregnant Women. Hoffman, D. B.: Am. J. Obst. & Gynec. **58**: 385, 1949.

There is pathologic evidence to support the theory that the manifestations of pre-eclamptic toxemia may be due to histamine or to a histamine-like substance. Treatment of pre-eclamptic patients with an antihistaminic drug was, therefore, attempted. Pregnant women who showed a rise in blood pressure, albumin in the urine, or an excessive gain in weight were placed on the usual regime of fluid restriction and a sodium-poor diet. If there was no improvement, Pyribenzamine in 50 mg. doses was administered 3 times daily. Forty patients were treated with the antihistaminic. Of 13 patients with albuminuria, 11 became albumin-free; of 12 patients with hypertension, 10 showed a definite fall in blood pressure; and of 15 patients with both albuminuria and hypertension, 12 showed a fall in blood pressure and, in 11 of these, the urine became albumin-free.

These results seem to indicate that antihistaminics are of value in the treatment of pre-eclamptic symptoms. JEROME SHERMAN.

Relation of Adrenal Cortical Steroids to Antibody Release. Hammond, C. W., and Novak, M.: Proc. Soc. Exper. Biol. & Med. **74**: 155, 1950.

Rabbits were sensitized by the intravenous injection of fresh, washed, sheep red blood cells on alternate days for 2.5 months. At the end of this period, the animals were sacrificed. The thymus, large mesenteric lymph node, and appendix were removed, minced, strained, and washed several times. The resultant suspension of immune lymphocytes was injected intravenously into 2 groups of normal rabbits. One group of animals was medicated with Lipo-Adrenal Cortex, 30 minutes prior to the injection of lymphocytes, while the other group received no premedication. Control studies were carried out by utilizing suspensions of lymphocytes from normal animals. Hemolysin could not be detected in any of the animals receiving lymphocytes from normal rabbits. One of the 6 animals that received both immune lymphocytes and cortical steroids showed a definite rise in the hemolysin titer, with the peak occurring in 24 hours. Since the effect of a single dose of cortical steroids is completely expended in 24 hours and injected lymphocytes circulate for approximately 30 minutes, it is doubtful

whether the results in this 1 animal are valid. The authors conclude that the administration of adrenal cortical steroids to rabbits receiving lymphocytes from donor rabbits immunized against sheep erythrocytes does not induce a release of antibody from these cells while they are circulating. B. S.

Relation of Nutritional Deficiency in Man to Antibody Production. Balch, H.: J. Immunol. **64**: 397, 1950.

Two groups of patients with negative Schick tests were given injections of a purified diphtheria toxoid in order to produce an anamnestic response. The first group consisted of well-nourished individuals while the other group was made up of patients in a state of extreme malnutrition. A uniform response in antitoxin levels was obtained in each series. Titers began to rise on the fourth day following the injections and reached a maximum between the fourteenth and the twenty-fourth day. There appeared to be no relationship between antibody response, the age of the patient, the initial antibody level, total serum protein, serum albumin or serum globulin levels. In one severely malnourished patient, enough diphtheria antitoxin was produced to account for about 37 per cent of the total circulating globulin. In a few subjects, antibody production proceeded until shortly before the patient expired. No correlation could be shown to exist between the antibody titers and the resistance to infection. It was concluded that nutritionally depleted patients with hypoproteinemia and progressive weight loss can nevertheless produce large quantities of antibody. R. WISEMAN.

Toxic Psychosis Due to Overdosage With Prophenpyridamine (Trimeton): Report of Two Cases With Recovery. Waldman, S., and Pelner, L.: J. A. M. A. **143**: 1334, 1950.

A 4-year-old boy and a 22-year-old woman, each of whom had received large doses of Trimeton, developed signs and symptoms of toxic psychosis. Recovery occurred in both cases. In the second case, Neostigmine was apparently successful employed as an atropine-like antidote for the antihistaminic. F.

Studies on Physiologic Effects of Large Doses of Epinephrine. Vigran, I. M., and Essex, H. E.: Am. J. Physiol. **162**: 230, 1950.

Preliminary experiments established the minimal lethal dose (MLD) and the surely lethal dose (SLD) of intravenous epinephrine for dogs, rabbits, and guinea pigs. A series of intact and sympathectomized dogs was shocked with large intravenous doses of the drug. Dogs that survived the initial shock were reinjected with higher doses from 8 to 36 days later. A high percentage of these reinjected animals survived amounts of epinephrine far in excess of the SLD. Physiologic effects of epinephrine shock, such as blood pressure and surface temperature changes, did not vary with the increase in tolerance to the shocking effect. Sympathectomized animals were unable to tolerate the large doses of epinephrine as well as the intact animals. Another series of dogs, which was given repeated large doses of epinephrine, developed sufficient tolerance to the drug to be able to withstand doses 3 times the SLD. Rabbits did not develop this tolerance. Experimental evidence is presented to show that the effect is not due to the development of an antihormone. Observations through transparent chambers inserted into the ears of dogs demonstrated that definite vasoconstriction occurred while epinephrine was being injected intravenously and continued throughout the injection period. These findings support the anoxia hypothesis of "adrenal shock." F.

Miscellaneous

The Zone of Localization of Antibodies. VIII. Some Properties of the Antigen Responsible for the Renal Localization of Antikidney Serum. Eisen, H. N., and Pressman, D.: J. Immunol. **64**: 487, 1950.

In one group of experiments, the radioiodinated globulin fraction of anti-rat-kidney rabbit serum (G-anti-R K) was absorbed with a homogenate of rat kidney, or with various fractions thereof, and the absorbed preparation bioassayed for renal localizing antibody by determining whether its capacity for renal localization was retained or lost. In another set of experiments, radioiodinated (G-anti-M K) was injected into mice, and, after the radioactive antikidney antibodies had localized, the kidneys were removed, homogenized, and the conditions required for the elution of radioactivity from the tissue homogenate were investigated with a variety of reagents. The results showed that the antigenic material in kidney responsible for localization of the radio-antibody in kidney is not extractable by highly concentrated saline solutions or by organic solvents, and that it is remarkably heat stable.

Absorption of the kidney-localizing antibody from anti-rat-kidney serum with several fractions of kidney homogenate demonstrated that the kidney-tissue antigen which combines with this antibody in vitro is contained only in the readily sedimentable fraction of the kidney homogenate. Liver homogenate, likewise, can absorb the kidney-localizing antibody, but to a lesser extent than can kidney homogenate.

The parallel behavior of the kidney-localizing antibody and the nephrotoxic principle of antikidney sera indicates the probable identity of these substances. The results obtained suggest that the nephritis produced by antikidney sera is associated with specific interaction of an antikidney antibody with an antigen in kidney tissue. R. WISEMAN.

The Immunologic Response of Children to the Injection of Chick Embryo Propagated Mumps Virus Vaccine, as Measured by the Complement Fixation Test. Cabasso, V., Ruegsegger, J. M., Looser, G. K., and Cox, H. R.: J. Lab. & Clin. Med. **35**: 771, 1950.

A formalin-inactivated chic embryo mumps virus vaccine was administered to 100 children varying in age from 9 to 15 years. Most of these children probably had had mumps. The children were divided into 4 equal groups each of which received the vaccine by different routes. A control group of 25 nonvaccinated children was also observed. The vaccine was administered to Groups I and II intracutaneously in doses of 0.1 ml., while Groups III and IV received doses of 0.5 ml. subcutaneously. Groups II and IV were given a second injection 2 weeks later. Seven weeks after the first injection, all the children received booster doses. The immunologic response was measured by intracutaneous tests made with 0.1 ml. of a 1:10 dilution of the vaccine on the forearm, and also by complement fixation tests. Skin tests were read according to the size of the erythema at 24 and 48 hours after the injection. Throughout this study, skin testing and complement fixation tests seemed to be of comparable value for the determination of susceptibility. According to both methods of determination, about 85 per cent of the children could be classified in the immune category prior to vaccination. Only 2 children of the series were regarded as true susceptibles. Complement fixation studies indicated higher titers in the vaccinated groups at the end of the third and ninth weeks than in the control group. At the end of a year, all 5 groups showed a considerable diminution in titers, but the vaccinated groups maintained considerably higher titers. At all stages after the initial vaccination,

Group IV showed the highest antibody titers. It was concluded that at least 2 injections of vaccine administered at 2- or 3-week intervals are necessary to give significant serologic titers. W.

Antigen-Antibody Reactions in Agar (I) Complexity of Antigen-Antibody Systems as Demonstrated by a Serum-Agar Technic. Munoz, J., and Becker, E. L.: J. Immunol. **65**: 47, 1950.

In order to determine the number of antigens present in any given material, the author used a method consisting of the addition of the antigen solution over a solid immune serum-agar mixture contained in a thin bore tube. An antigen-antibody precipitate produces a sharp band which moves down the tube as more antigen diffuses into the agar. Rabbits were sensitized with recrystallized egg albumin and the sera were employed to test various antigens by the serum-agar technique. The results showed that only one band was formed when a single antigen-antibody system was present, but that multiple systems produced multiple bands. When the method of supernatant analysis, commonly used to test the homogeneity of antigen-antibody systems, was compared with the serum-agar technique, good agreement was found between the two methods. It is suggested that the serum-agar technique may be of value in determining the homogeneity of antigen-antibody systems and in following the purification of antigenic materials or fractionation of an antigen mixture into its component parts. R. WISEMAN.

Serological Diagnosis of Herpes Simplex Infections. Hayward, M.: Lancet **1**: 856, 1950.

Extraembryonic fluid from herpes-infected chick embryos was used as an antigen for testing immune guinea pigs and adult human sera by the complement fixation and neutralization techniques. Four different strains of herpes simplex virus reacted similarly by both methods when immune guinea pig sera were used. Eighty per cent of the sera from 95 adult subjects were found to contain herpetic antibody. It was concluded that the complement fixation technique provides a simple and reliable method for the detection and titration of herpetic antibody in human sera. R. WISEMAN.

Ascorbic Acid and the Production Antibody in the Guinea Pig. Long, D. A.: Brit. J. Exper. Path. **31**: 183, 1950.

No sound conclusion has been reached as to the effect of vitamin C deficiency upon resistance to infection. Vitamin C deficiency can be studied only in animals such as the guinea pig and the primates, which depend upon the diet for their vitamin C and cannot synthesize it.

Immunologically, one must distinguish between the "primary response," the response following the single injection of an antigen, and the "second response," the response to antigen after the animal has received one or more injections. Measurement of the primary response is unlikely to give significant results unless it is carried out most carefully. Blood antibody response is small, develops slowly, and falls rapidly. The blood antibody response to more than one injection of antigen is greater, develops quickly, is maintained more easily, and can be measured more accurately.

The primary antitoxin response of vitamin C deficient guinea pigs to alum-precipitated diphtheria toxoid is not significantly reduced when compared with the response in guinea pigs receiving excess vitamin C. The "second" antitoxin response of animals deficient in vitamin C is, however, greatly reduced. It cannot be said that vitamin C has no direct influence on the immune state. However, the nature of the influence is still obscure. C.

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